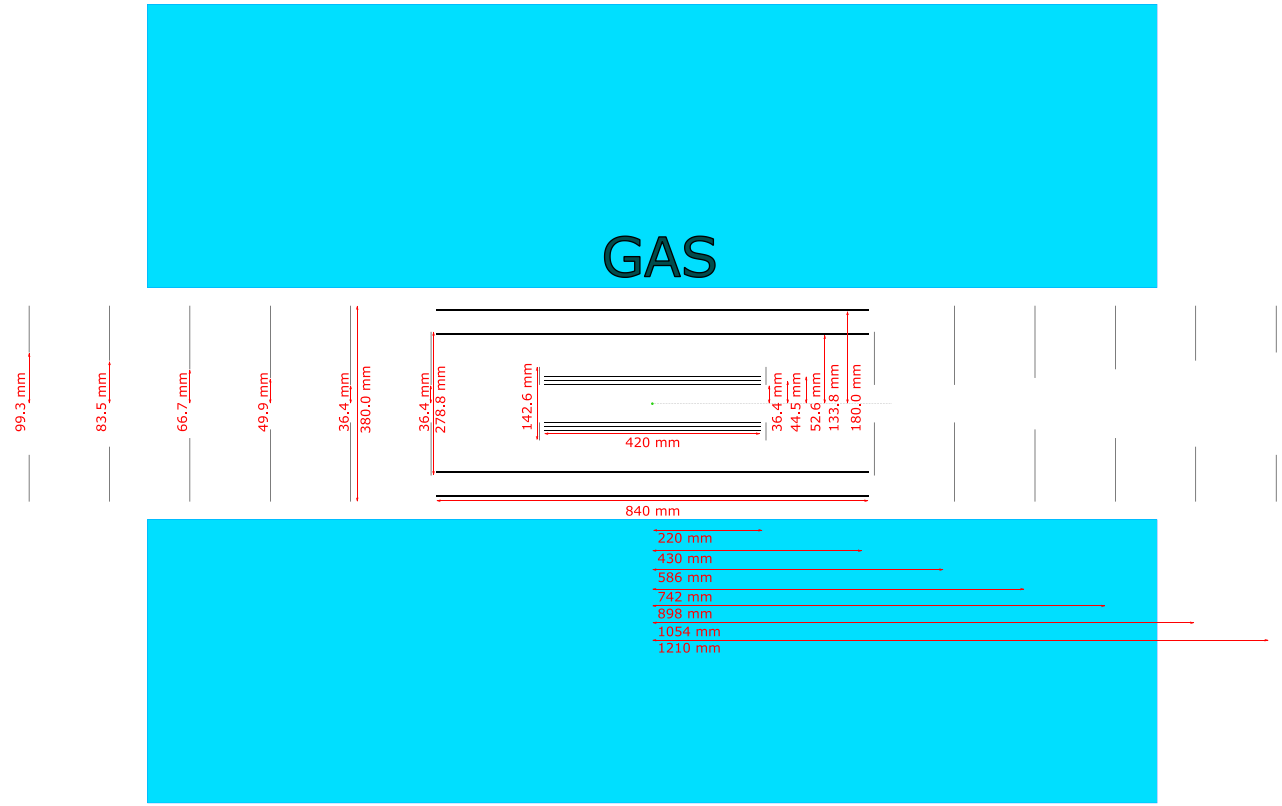
Hybrid detector SVT baseline proposal

H. Wennlöf on behalf of eRD25, 27/8 -20

- Previous simulations, and discussion within eRD25 on 25th of August concerning details yielded this proposal for the **silicon part of a baseline hybrid tracker layout**, taking beampipe and technology choice into account.
- This layout has a gaseous tracker outside the silicon barrel, be it TPC or MPGD layers or a combination of them.
- Silicon part consists of barrel and disks, inside the gaseous detector
  - Whether or not to replace some silicon disks with gaseous detectors is up for discussion and investigation, but innermost disks should be high-granularity low-material detectors
- All-silicon baseline nearly agreed on, just a few more simulations needed.

Hybrid baseline - silicon

- 3 inner layers
- 2 outer layers
- 7 disks in either direction
  - Disk outer radii tapered, leaving space for supports and services
- Material in accordance with Leo ITS3-like predictions;
  - Inner layers: 0.05% X/X_0
  - Outer layers: 0.55% X/X_0
  - Disks: 0.24% X/X_0
- Baseline pixel size: 10x10 μm^2
- Radial space used: 36.4 - 200.0 mm



Cross section sketch

Created as GDML files using EICROOT and imported into Fun4All

- GDML files and a way to import them into Fun4All can be found here
  - Questions on how to do this can be sent to h.wennlof@cern.ch
- Possible to integrate with different gas detectors.
  - Image shows Fun4All TPC implementation